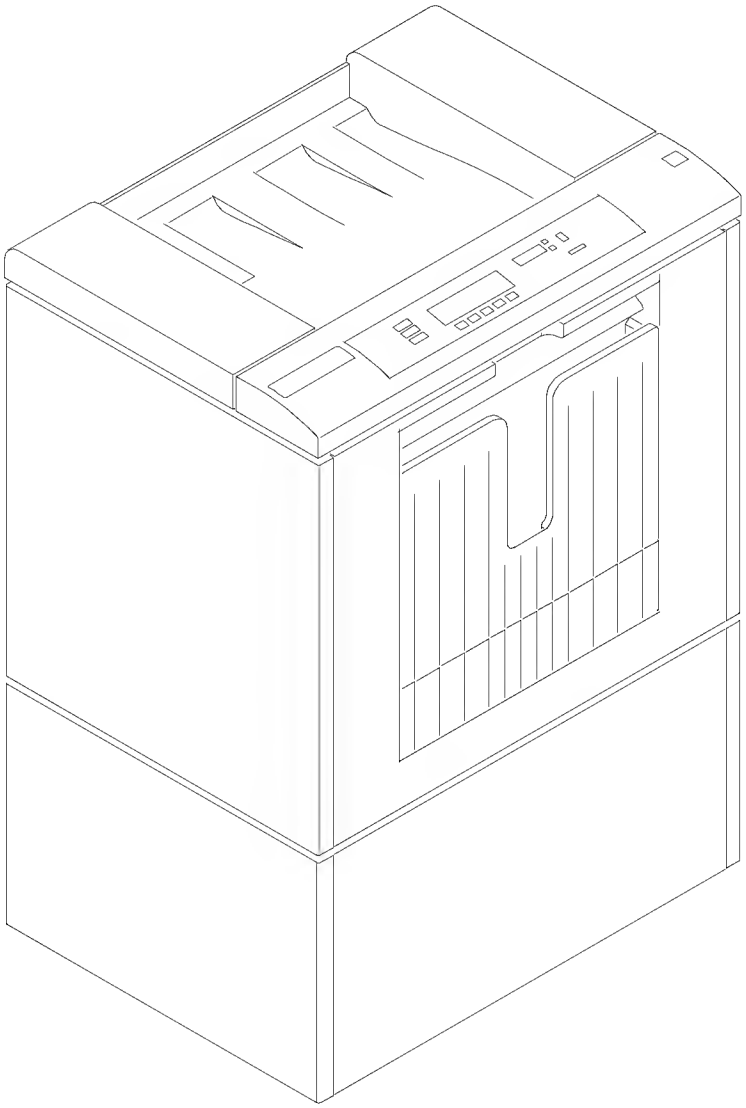
Publication No. 2B6842
5/94
Supersedes 636714
April 1991

SITE SPECIFICATIONS

for the

KODAK X-OMAT 270 RA Processor



H104_0107DA

© Eastman Kodak Company, 1994

PLEASE NOTE

The information contained herein is based on the experience and knowledge relating to the subject matter gained by Eastman Kodak Company prior to publication.

No patent license is granted by this information.

Eastman Kodak Company reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Kodak shall not be liable for any loss or damage, including consequential or special damages, resulting from the use of this information, even if loss or damage is caused by Kodak's negligence or other fault.

WARNING

To avoid hazardous conditions, keep floors and floor coverings around your KODAK X-OMAT Processor and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc, should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your KODAK X-OMAT Processor, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a KODAK X-OMAT Processor. Such drains are the sole responsibility of the customer.

Table of Contents

Description	Page
Dimensions and Weights	4
Electrical Requirements	6
Agency Listings	6
Basic Requirements	6
Standard Service Option Chart	6
Processor Interface Connector (PIC)	7
Interface Phone Jack	8
Main Power Disconnect	9
Water and Drain Requirements	10
Processor Supply	10
Drain	10
Plumbing Connections	12
Room Ambient Conditions	13
Air and Heat	13
Venting	13
Replenishment System Requirements	16
Recommended Room Layout	18
Seismic Kit	22
Center of Gravity	23
Warranty	24
Publication Change Table	25

Table 1 Dimensions and Weights

Description	Crated	Uncrated
Length (without shelf)	74 cm (29 in.)	58.4 cm (23.0 in.)
Length (with shelf)	N/A	85.2 cm (33.6 in.)
Width	94 cm (37 in.)	78.7 cm (31.0 in.)
Height (without stand)	120 cm (47 in.)	70.1 cm (27.6 in.)
Height (with stand)	165 cm (65 in.)	114 cm (44.9 in.)
Weight (empty) without stand with stand	 136 kg (300 lb) 156 kg (343 lb)	 125 kg (275 lb) 144 kg (318 lb)
Weight (full of solutions) without stand with stand	 N/A N/A	 144 kg (317 lb) 163 kg (360 lb)

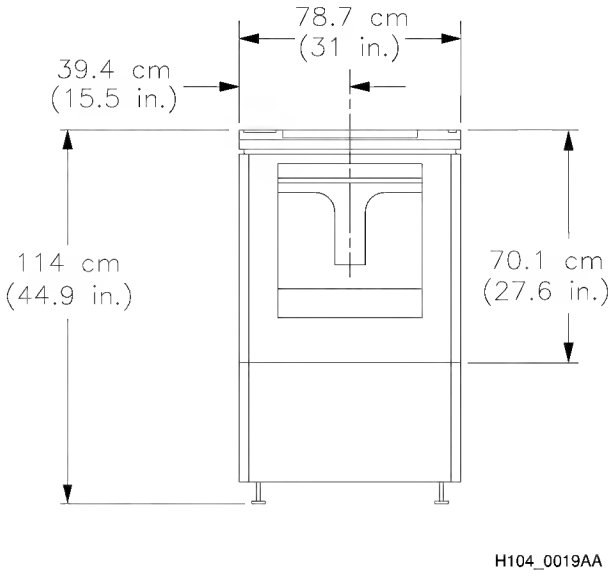


Figure 1 Receiving End

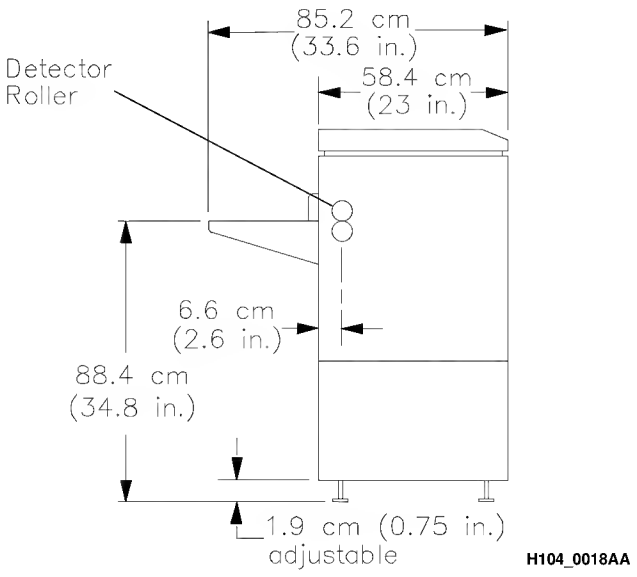


Figure 2 Side View

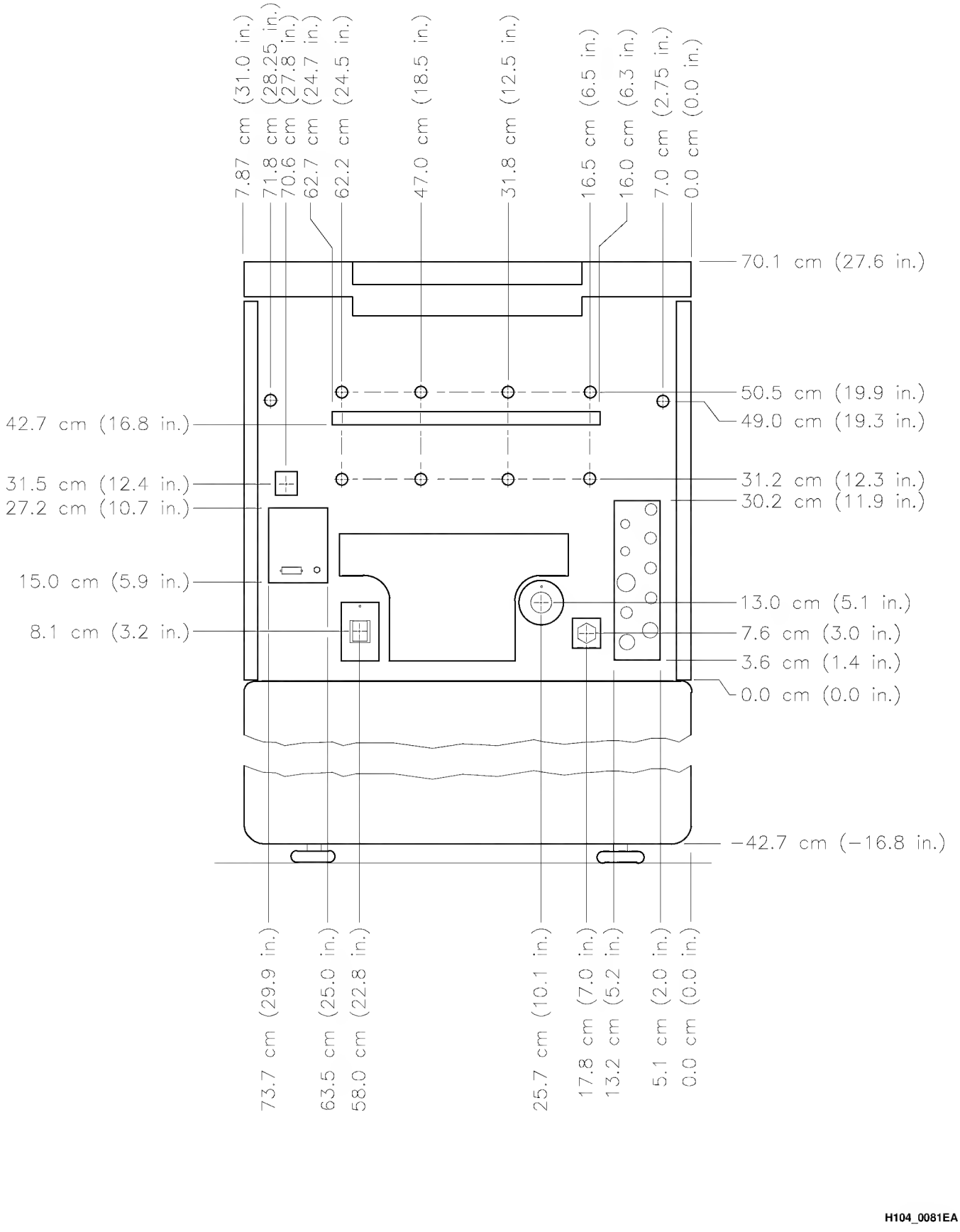


Figure 3 Dimensions for the Feed End

Electrical Requirements

Agency Listings

The Processor has the following Agency listings—

- UL Listed to Standard No. 122
- CSA Certified to Standard C22.2, No. 950-M89
- TUV Licensed to EN 60950
- FCC Approved (Part 15 Class A limits)

Basic Requirements

- Amperage: 30 A, single-phase; **or** 20 A, three-phase
- single-phase 2-wire; **or** 3-phase 3-wire **or** 4-wire service
- earth ground

Standard Service Option Chart

IMPORTANT

All electrical services, **including earth ground**, must comply with local and national electrical codes.

Table 2 Service Options

Voltage volts	Frequency Hz	Service
200	50/60	2-wire, single phase
220	50/60	2-wire, single phase
230	50/60	2-wire, single phase
240	50/60	2-wire, single phase
100/200	50/60	3-wire, single phase
120/240	50/60	3-wire, single phase
120/208	60	3-wire, 3-phase*, wye
127/220	50	3-wire, 3-phase*, wye
220/380	50	3-wire, 3-phase*, wye
230/400	50	3-wire, 3-phase*, wye
240/415	50	3-wire, 3-phase*, wye
200	50/60	3-wire, 3-phase, delta
120/208	60	4-wire, 3-phase, wye
127/220	50	4-wire, 3-phase, wye
220/380	50	4-wire, 3-phase, wye
230/400	50	4-wire, 3-phase, wye
240/415	50	4-wire, 3-phase, wye

* L1, L2, and Neutral used in this configuration are sometimes referred to as Single Phase Connections.

Processor Interface Connector (PIC)

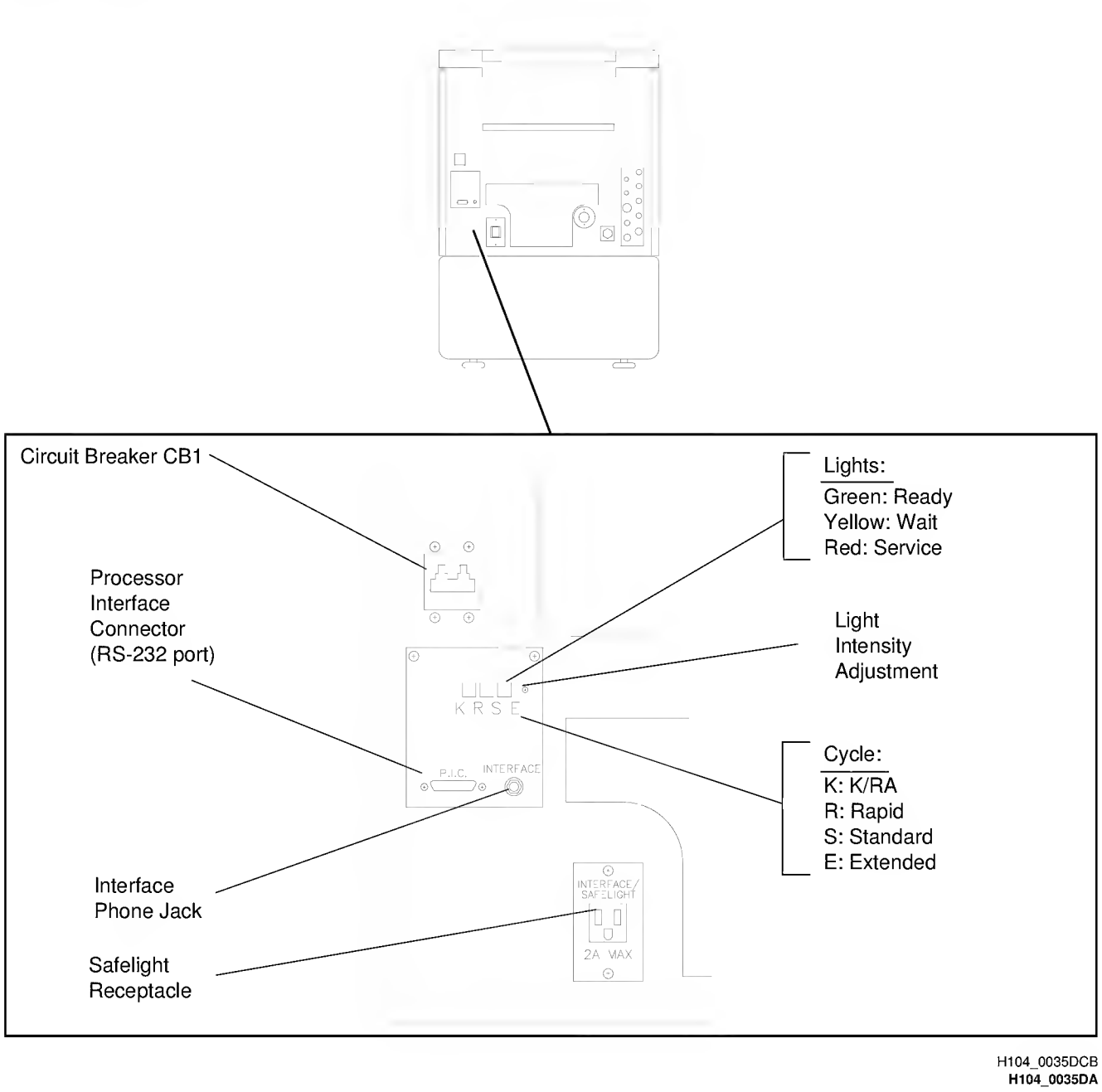


Figure 4 Feed-End Panel

PIC Connector on Processor: 15 Position Panel Mount Subminiature D, AMP Part No. 1-747299-0 or equivalent.

Customer Supplied Mating Connector: AMP Part No. 205206-1 or equivalent.

Table 3 Pinout for the Processor Interface Connector (PIC) Port

PIC#	Signal Description	Type	Function
1	Shield	Ground	Connection for the cable's shield in an RS232 system.
2	Transmit Data (TxD)	Output	Data out from the Processor in an RS232 system.
3	Receive Data (RxD)	Input	Data into the Processor in an RS232 system.
4	Request to Send (RTS)	Output	Handshake line for the control of data out from the Processor in an RS232 system.
5	Clear to Send (CTS)	Input	Handshake line for the control of data into the Processor in an RS232 system.
6	Common/Return	Input	Signal common in an RS232 system and +5 V return.
7	Processor Cycle CØ	Output	TTL logic signal indicating Processor cycle[1].
8	Processor Cycle C1	Output	TTL logic signal indicating Processor cycle[1].
9	Run	Input	TTL logic signal, active **LOW**, places Processor in Run mode.
10	Alarm	Output	TTL logic signal, active **HIGH** indicating an alarm.
11	Service	Output	TTL logic signal, active **HIGH** indicating a fault requiring service.
12	Ready	Output	TTL logic signal, active **HIGH** indicating Processor is operating within specification.
13	Film Feed	Output	TTL logic signal, active **LOW** indicating a sheet of film may be inserted into the Processor.
14	Reserved for Future Use	Input	TTL logic signal input not used at this time.
15	+5 V DC (1 A Max.)	Output	Logic supply source of 5 V DC, indicates Processor is on.

[1]Cycle	C1	C0
Kwik - K/RA	1	1
Rapid	1	0
Standard	0	1
Extended	0	0

NOTE

TTL HIGH "1" = $\geq$ 3.84 v @ 4 mA
TTL LOW "0" = $\leq$ 0.50 v @ 4 mA

Interface Phone Jack

Specification: Accepts standard 3-circuit 6.35 mm (¼ in.) phone plug.

Connection:

- Tip-Run (see No. 9 above)
- Sleeve-Common/Return (see No. 6 above)

Main Power Disconnect

A wall mounted main power disconnect switch, which is not furnished, is shown in Figure 5. This switch should consist of a thermomagnetic circuit breaker with solid neutral and common trip **or** a fused disconnect switch and **must be**—

- located on a wall adjacent to the Processor in the lighted area
- visible and accessible from the site of the Processor
- a safe distance from water

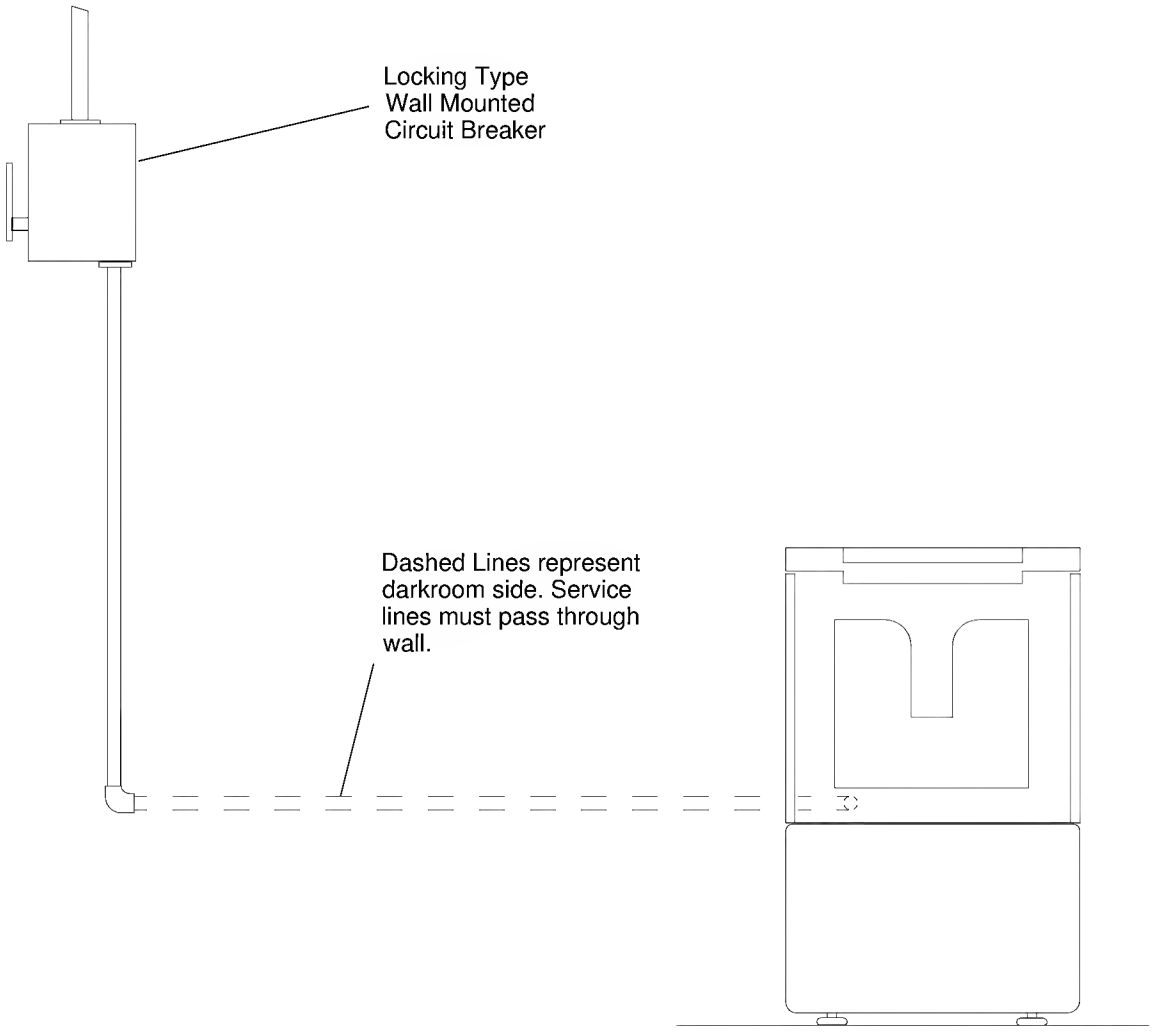


Figure 5 Locating the Main Power Disconnect

Processor Supply

IMPORTANT

- Water supply and plumbing must comply with local codes; iron piping is **not** recommended.
- Water supply may be located on either side of the Processor and **must be** accessible.
- Recommended pipe size: ½ in.
- Tempered water optional if cold water temperature is within specified range.
- If the upper limit of the room ambient temperature or the water supply temperature is exceeded, a water chiller may be required.
- Tempered water service is suggested for cleaning the Processor and for mixing chemicals manually.
- Connection parts are not furnished by Kodak.

Temperature: 4.5° to 29.5°C (40° to 85°F).

Pressure: 173 to 692 kPa (25 to 100 psi); Install regulator if required.

Flow Volume: Controlled within the Processor to 2.9 L/min (¾ gal/min or 3 quarts/min), +10% -0%.

Filtration: A 50 micron water filter is required (not supplied by Kodak) in the input water line.

Check Valve: The Processor has an internal 12.7 cm (5 in.) water gap in the wash rack. A check valve (or vacuum breaker) should **not** be necessary; however, check and observe local codes.

Drain

WARNING

- Drains must be made of chemically resistant, non-corrosive material. Use PVC or the equivalent.
- The drain must have a minimum diameter of 7.6 cm (3 in.) and be free of obstruction.
- Drain service must comply with all local codes.
- Do not make a solid connection between the hoses and the drain.
- Locate the drain within 1.5 metres (60 in.) of the Processor.
- The drain line should slope gradually downward to the floor drain.

Capacity: 15 L/min (4 gal/min).

Connection: 7.6 cm (3 in.) diameter, corrosive resistant recommended.

IMPORTANT

Any restriction such as a kinked or upward sloping hose from the wash drain can cause the draining wash water to move back into the wash tank. This can cause an overflow of water onto the electrical box. Correctly route the hose so that it slopes toward the drain. Reinforced hose, which will not kink, and right-angle elbows for entering the drain are available from Service Parts Management. Order the following parts, if necessary:

- 696442 - Reinforced Hose, 5/8 in. ID, order by the foot
- 1C4521 - Elbow, 5/8 in.
- 696441 - Reinforced Hose, 1 in. ID, order by the foot
- 1C4524 - Elbow, 1 in.

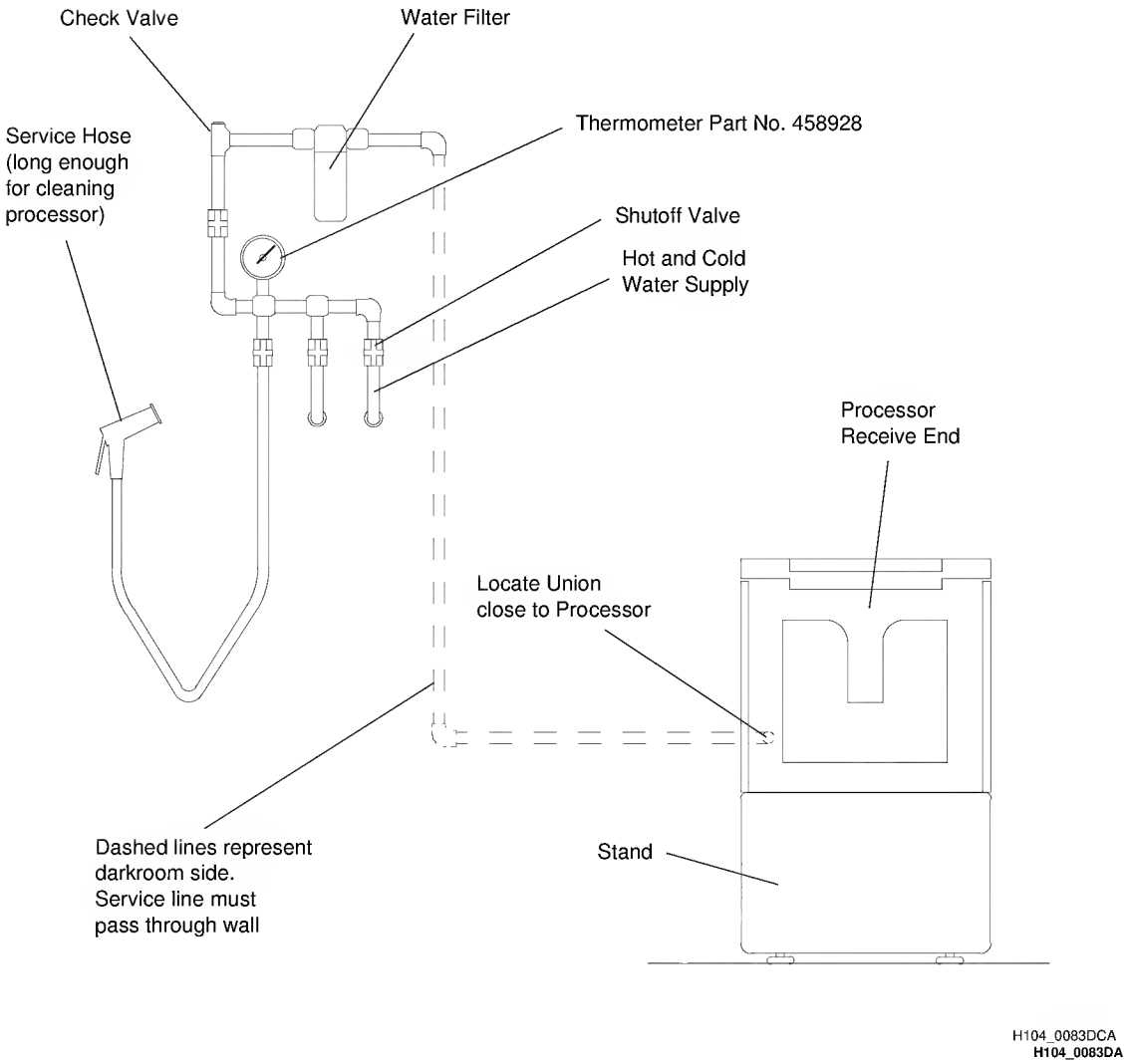


Figure 6 Suggested Processor Water Supply
Note: The Check Valve should not be necessary; however, check local codes.

A 9.5 mm (⅜ in.), ID, hose fitting
B 1.59 cm (⅝ in.), ID, hose fitting
C 2.54 cm (1 in.), ID, hose fitting
D male garden hose fitting

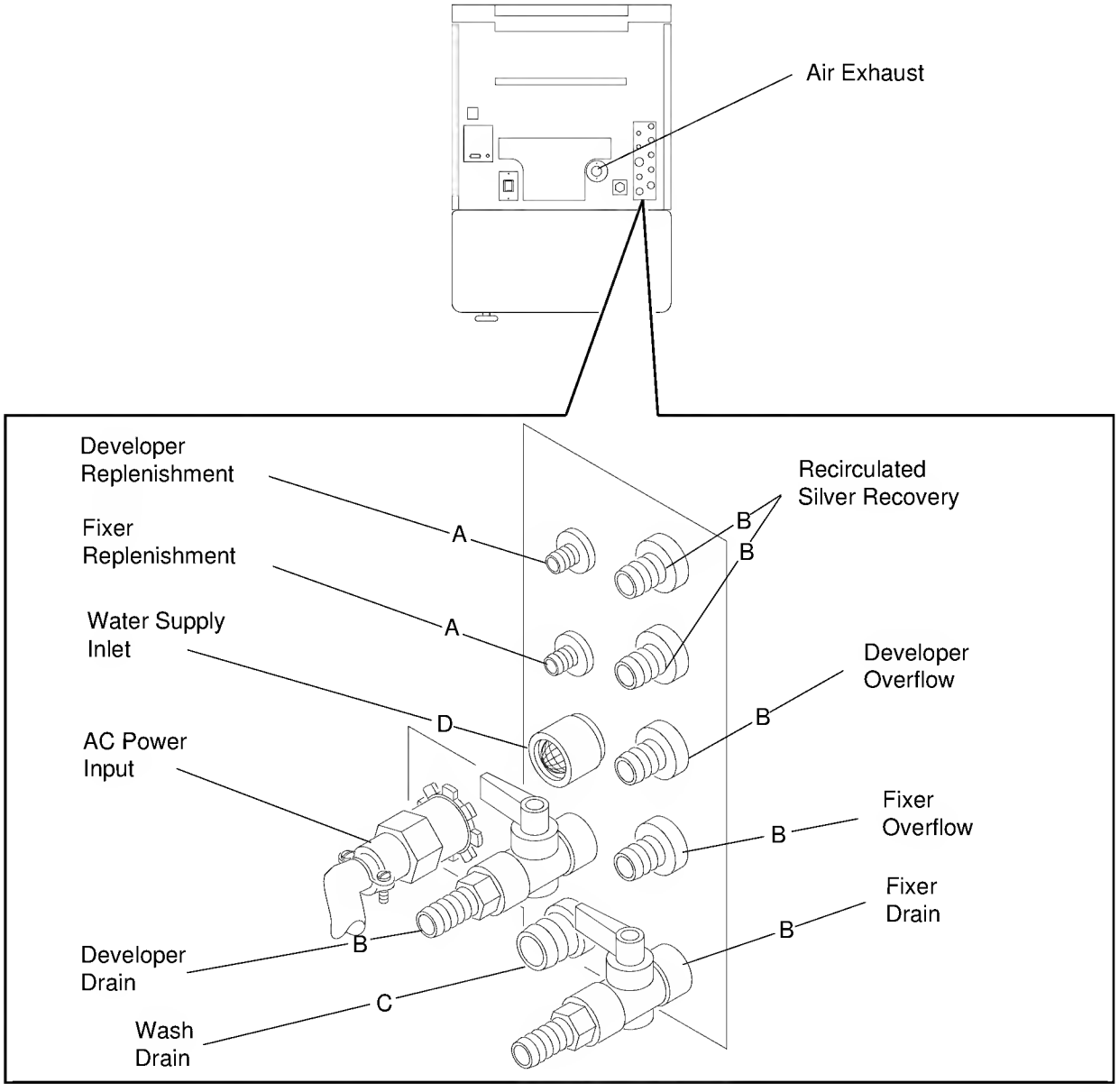


Figure 7 Plumbing Connections

Room Ambient Conditions

Room Temperature	15°C (59°F) to 30°C (86°F).
Humidity	15% to 76% Relative Humidity.

Air and Heat

Air Exhaust (full load):	• Volume: 2,124 L/min (75 ft^3/min) • Temperature: 66°C (150°F) maximum
Processor Exhaust Adapter:	7.6 cm (3 in.)
Heat load to room:	4220 kJ/hr (4000 Btu/hr)

Venting

Checking the Negative Static Pressure

IMPORTANT

- An Auxiliary Ventilation Fan Kit is available from Service Parts Management for sites with exhaust problems. Order Part No. 264503.
- If the venting is not correct, fumes will corrode equipment. **Do not install** the Processor or accessories if the venting is not correct.
- The airflow is correct when the fumes are flowing out of the Processor through the Exhaust Hose. **Before installing the Processor, or at the next service call,** do the following procedure to check that the airflow is correct.

Do the following procedure, using an Air Meter TL-2431, to check that venting is correct.

[1] If the Processor is installed, deenergize the Processor.

[2] Disconnect the Exhaust Hose from the Processor Exhaust Adapter.

[3] Place the Rubber Hose on the Center Connector of the Air Meter.

[4] If a replenishment J Tube, TL-4803, is available, do the following. If not, advance to Step 5.

(a) Cut off and discard the curved portion of the replenishment J Tube.

(b) Install the tapered end of the replenishment J Tube into the Rubber Hose.

(c) Advance to Step 7 on page 14.

[5] If a replenishment J Tube is not available, align a Hose Support, such as a straightened coat hanger, next to the Rubber Hose. The ends of the Hose Support and the Rubber Hose must be together.

[6] Place tape around the Hose Support and the Rubber Hose at 3 points. See Figure 8 on page 14.

IMPORTANT

- The tape should not inhibit the airflow through the Rubber Hose.
- The Rubber Hose or J Tube must be in the center of the Exhaust Duct.

[7] Insert the replenishment J Tube or the Rubber Hose into the Exhaust Hose until the end is 30 cm (12 in.) from the end of the Exhaust Hose.

[8] Hold the Air Meter vertically, and record the average of several readings.

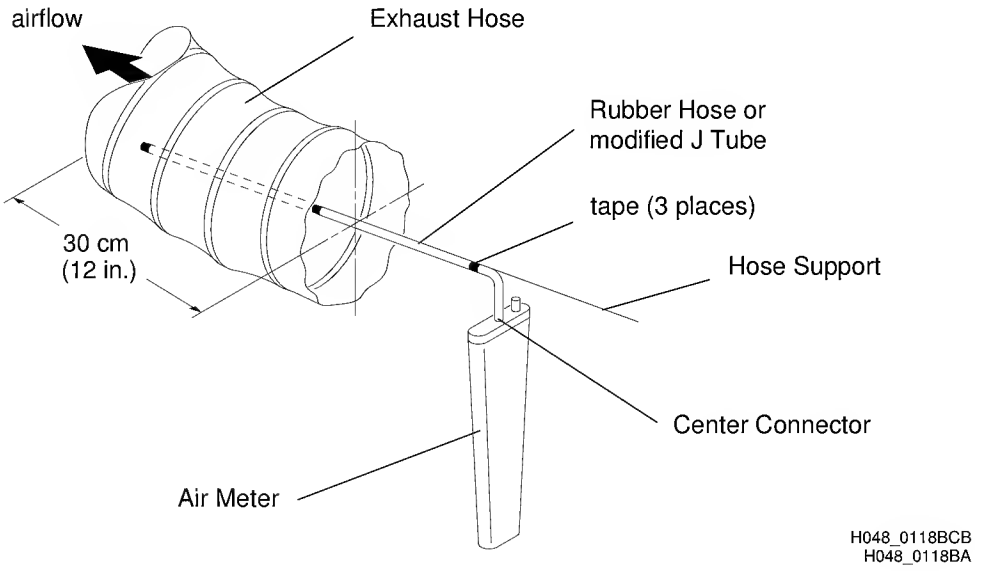


Figure 8 Using the Air Meter

[9] Compare the average reading with the table:

Table 4 Measuring the Static Pressure

Duct Diameter	Negative Static Pressure, Water Head	
	MIN	MAX
76 mm (3 in.)	0.76 mm (0.03 in.)	1.02 mm (0.04 in.)
102 mm (4 in.)	0.25 mm (0.01 in.)	0.51 mm (0.02 in.)

[10] Adjust one of the following to obtain the required reading:

(a) the damper (or fan) in the building ventilation system or

(b) the clearance between the Exhaust Duct and the Exhaust Hose, not to exceed 5 cm (2 in.). See Figure 9 on page 15.

[11] If the airflow reading is still not correct, contact the sales representative and the customer to correct the venting.

[12] When the airflow reading is the same as the measurements in Table 4, connect all the hoses.

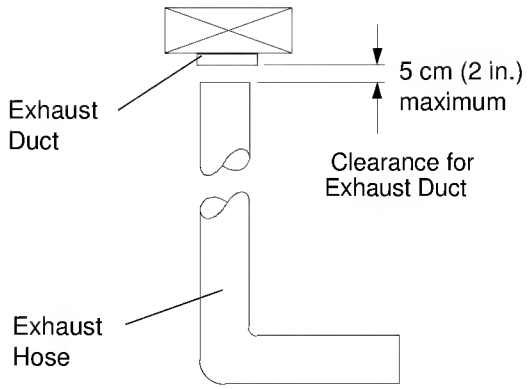


Figure 9 Exhaust Requirements

[13] If the Processor has been installed, install the Covers and Panels on the Processor.

IMPORTANT

- Inform the customer that all Covers and Panels must be installed while the Processor is energized.
- If the Processor is installed through the darkroom wall, it is most important that the air pressure in the darkroom is greater than the air pressure of the area surrounding the darkroom. For example, the air in a 3 m^3 (10 ft^3) room should change 10 times per hour.

[14] Do the following to check the airflow at the Feed Shelf:

(a) If the Processor is installed, deenergize the Processor.

(b) Hold a piece of tissue paper in front of the Feed Shelf.

NOTE

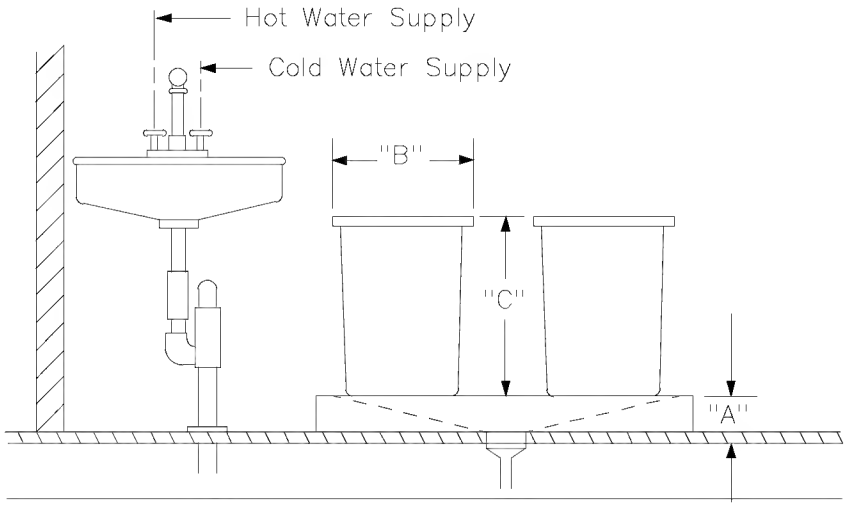
The airflow should be **toward** the Processor.

(c) If the tissue paper moves away from the Processor, call Customer Service for Health Sciences Monday through Friday from 8:00 a.m. to 5:00 p.m. Rochester, New York, time at (716) 724-1789. Then press "1".

Table 5 Dimensional Requirements for the Replenisher Tanks

Description	Dimension	Replenisher Tank Size		
		14 Gallon	30 Gallon	55 Gallon*
Maximum Platform Height	"A"	48.3 cm (19 in.)	35.6 cm (14 in.)	15.2 cm (6 in.)
Diameter	"B"	43.2 cm (17 in.)	55.9 cm (22 in.)	61.0 cm (24 in.)
Tank Height	"C"	58.4 cm (23 in.)	70.5 cm (27¾ in.)	90.8 cm (35¾ in.)
External Replenisher Tank Area See Figure 12 on page 19	"D" x "E" (Minimum)	61.0 x 127.0 cm (24 x 50 in.)	61.0 x 152.4 cm (24 x 60 in.)	66.0 x 172.7 cm (26 x 68 in.)

* To prevent replenishment solutions from flowing through the Replenishment Pumps when using a 55 gallon Replenisher Tank, the volume of replenishment solution in the tank must be limited:
Processor on the Floor: Solution level not to exceed 76 cm (30 in.)
Processor on a Stand: Solution level not to exceed 120 cm (47 in.)



P104_0002BA

Figure 10 Dimensions Necessary for Replenisher Tanks

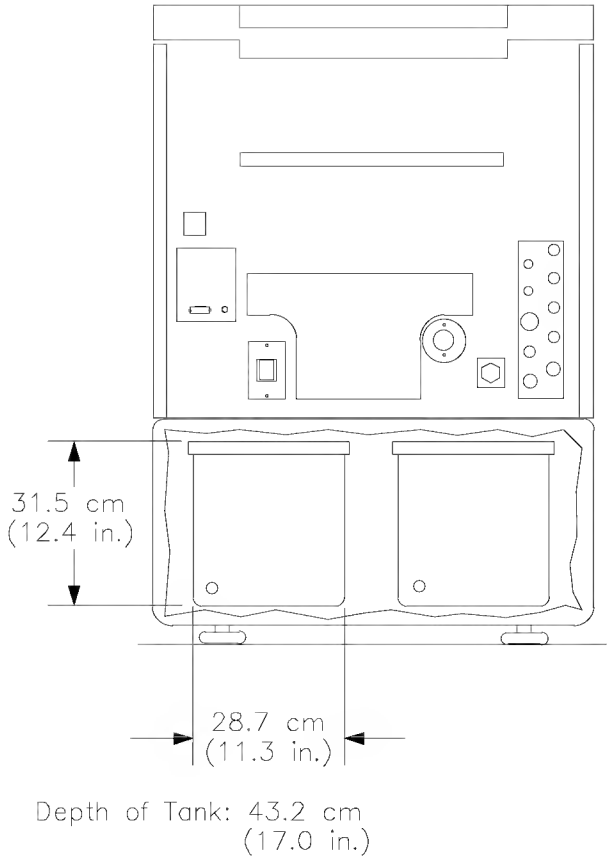


Figure 11 KODAK Developer-Fixer Replenisher Tank Set, Model M7, CAT No. 150 0537 (optional)

Table 6 Maintenance and Operation Access Requirements

Symbol (See Figure 12)	Description	Recommended Minimum Distances
R	Drive side of Processor	91 cm (36 in.)
S	Non-drive side of Processor	91 cm (36 in.)
T	Dryer side of Processor	91 cm (36 in.)
U	Feed end of Processor	91 cm (36 in.)
	Top side of Processor	91 cm (36 in.)

IMPORTANT

- Service time—and therefore service cost—may be increased if recommended access requirements are not met.
- Against-the-wall installation is permissible if all electrical and plumbing connections can be readily disconnected or an access panel in the wall is provided.

WARNING

- Drains must be made of chemically resistant, non-corrosive material. Use PVC or the equivalent.
- The drain must have a minimum diameter of 7.6 cm (3 in.) and be free of obstruction.
- Drain service must comply with all local codes.
- Do not make a solid connection between the hoses and the drain.
- Locate the drain within 1.5 metres (60 in.) of the Processor.
- The drain line should slope gradually downward to the floor drain.

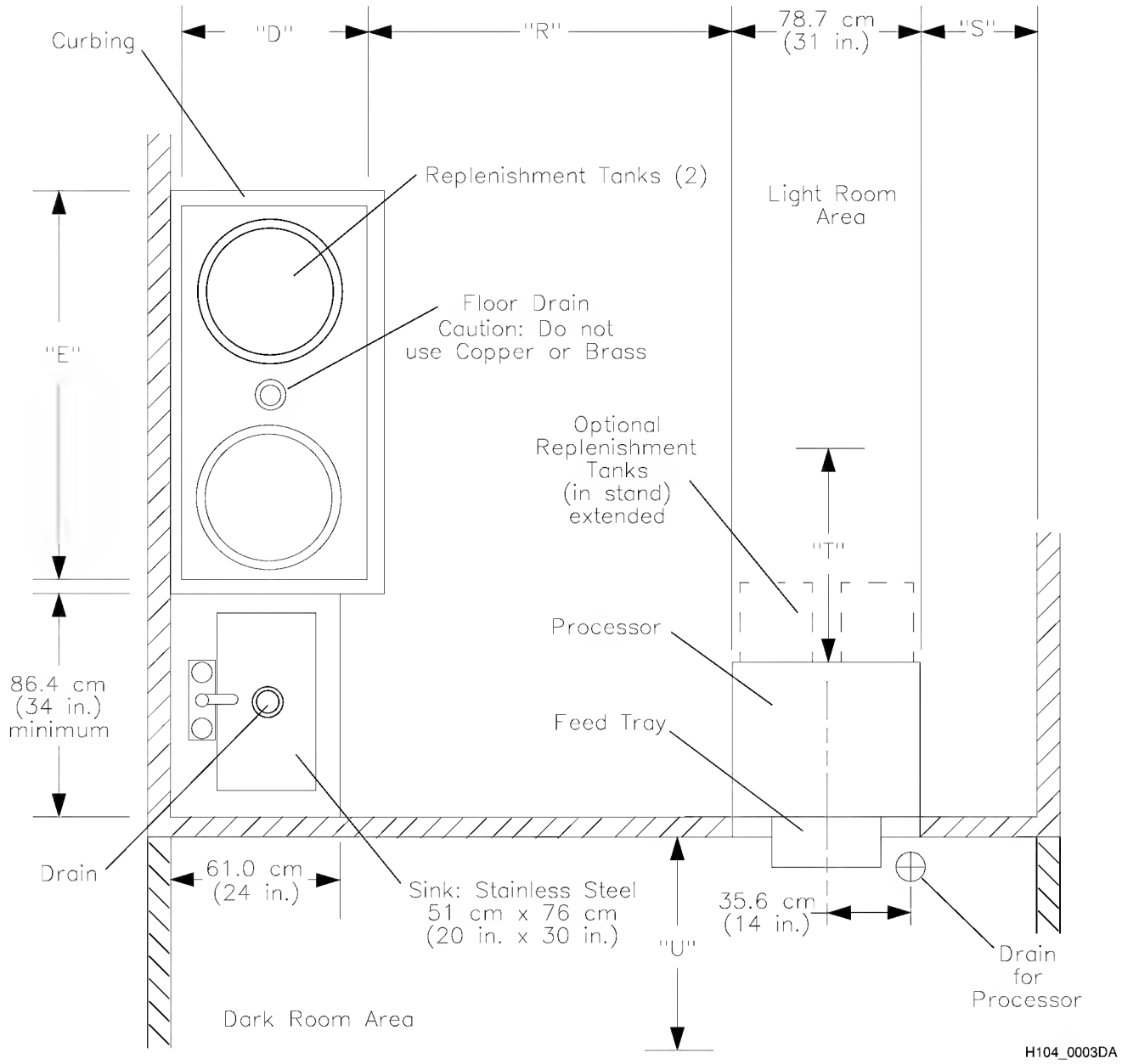


Figure 12 Suggested Room Layout and Drain Locations (drawing not to scale)
Note: For dimensions "D" and "E" see Table 5 on page 16.

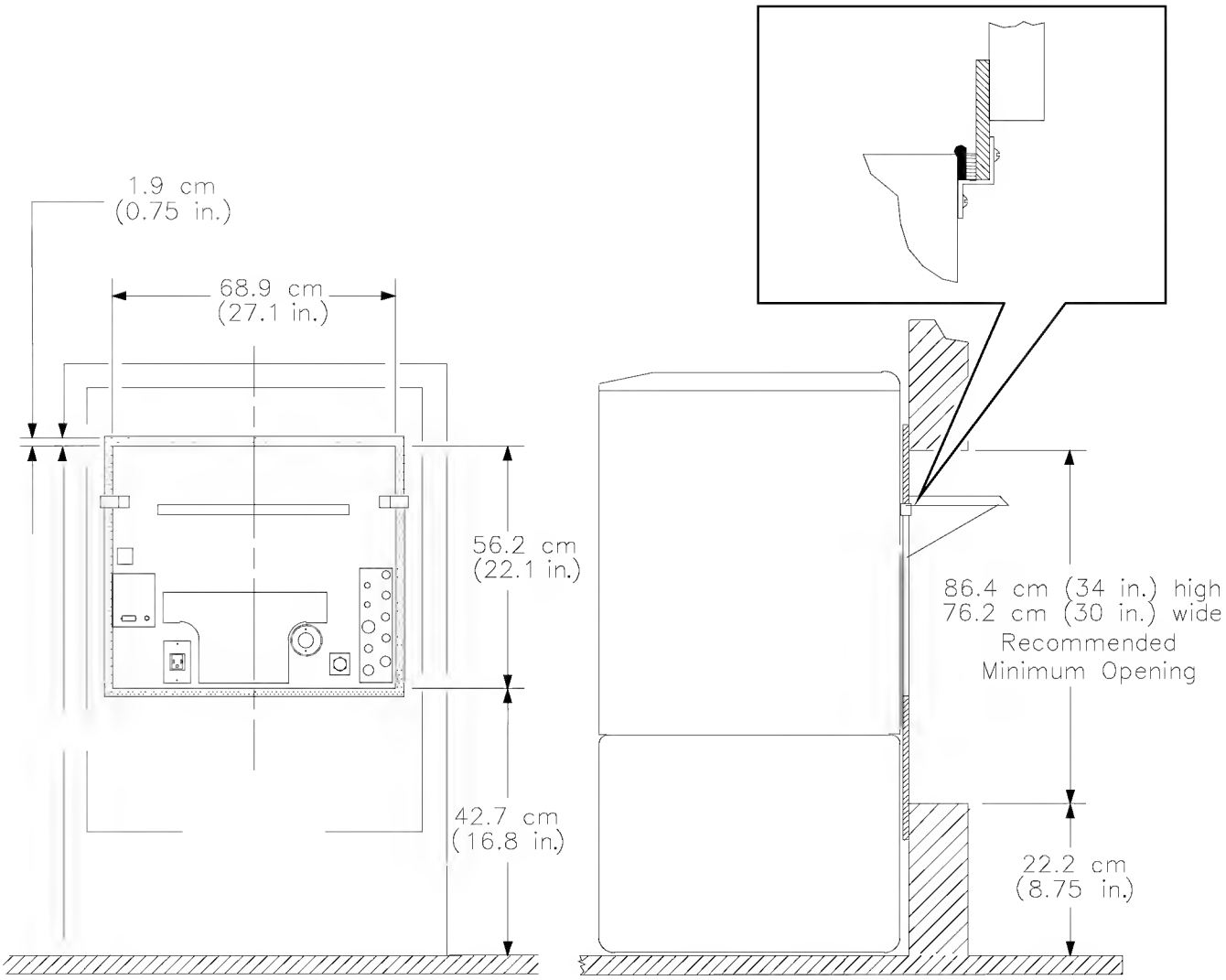


Figure 13 New Wall Installation, View 1

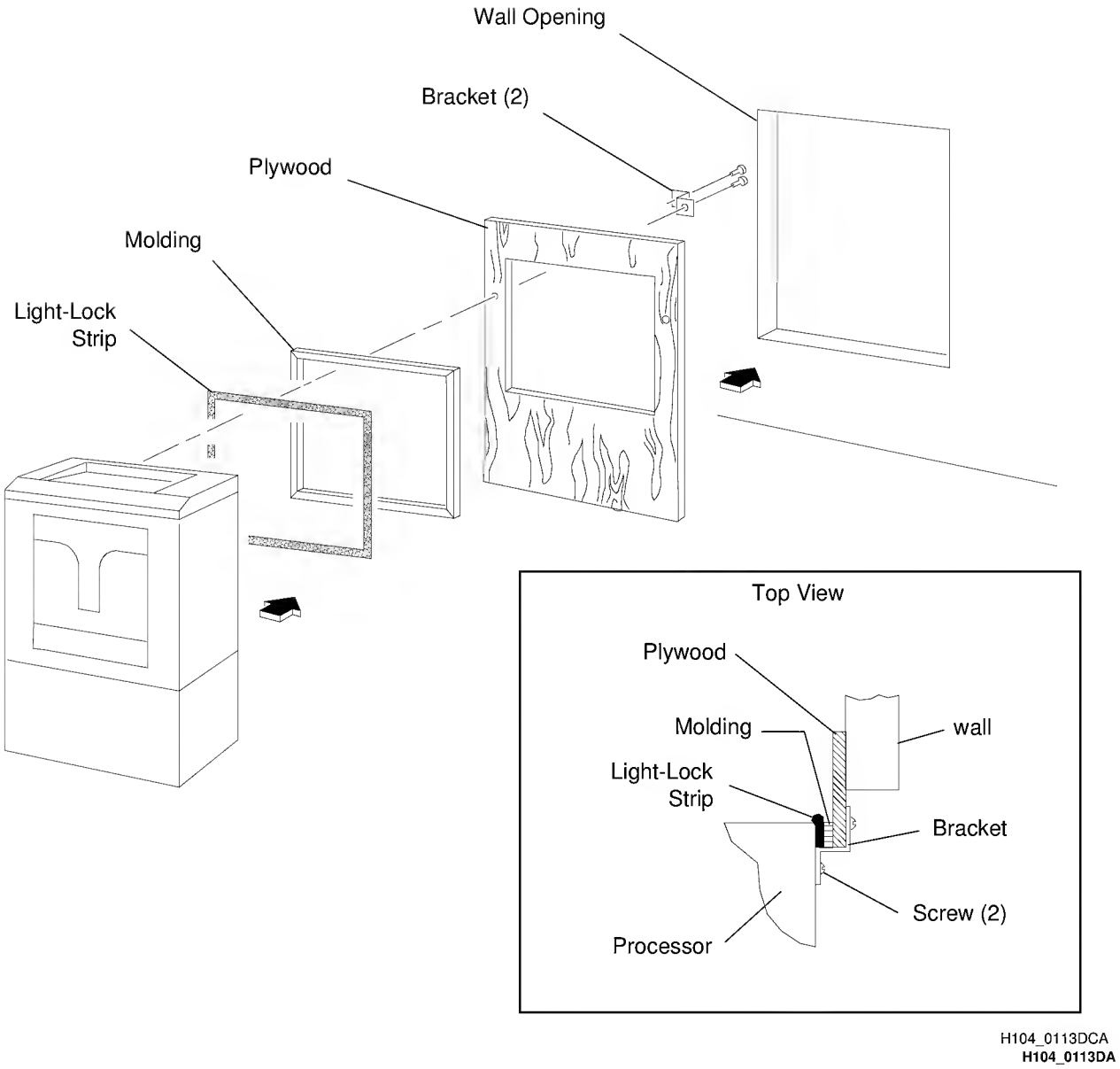


Figure 14 New Wall Installation, View 2

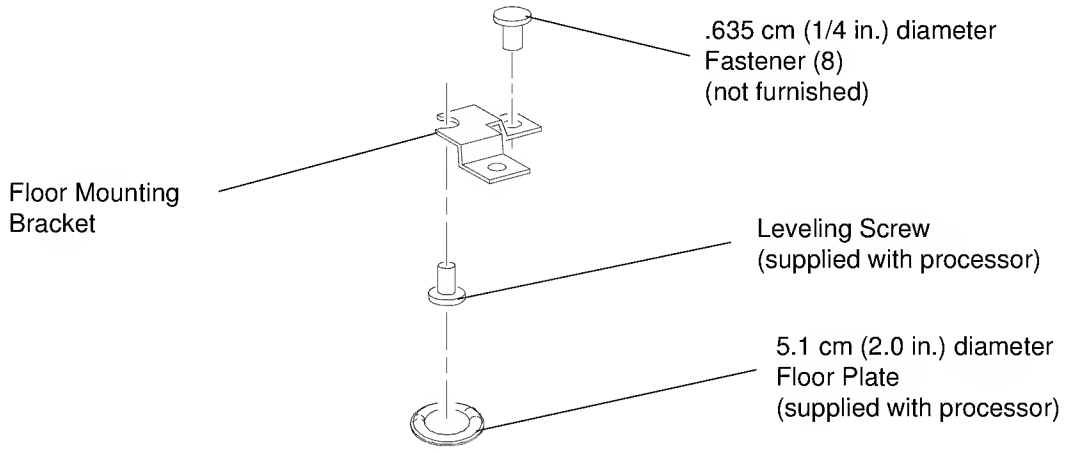


Figure 15 Seismic Kit
(May be required by local code)

Seismic Kit	Part No.
Processor Only	914894
Processor with Stand	914895

NOTE

The Seismic Kit contains 4 Floor Mounting Brackets and installation instructions.

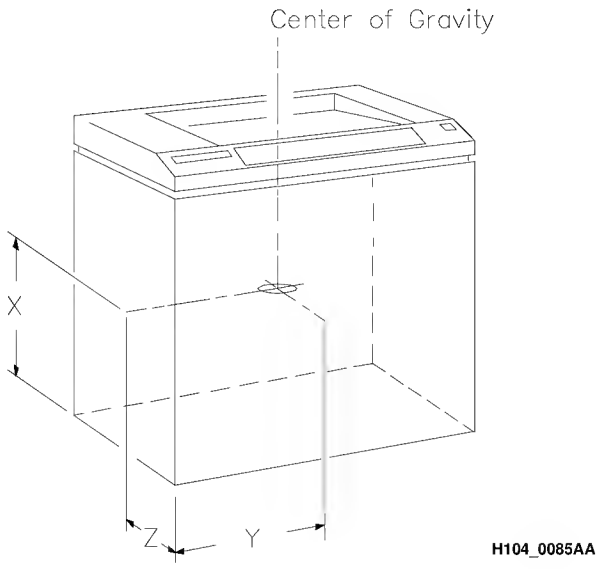


Table 7 Center of Gravity

	X	Y	Z
Processor only	33 cm (13 in.)	38 cm (15 in.)	30 cm (12 in.)
Processor with Stand	76 cm (30 in.)	38 cm (15 in.)	30 cm (12 in.)

Kodak warrants this KODAK X-OMAT 270 RA Processor to function correctly for one year from the date of initial installation, when installed within one year from date of shipment.

Warranty Repair Coverage

If this equipment does not function correctly during the warranty period, the dealer (for KODAK X-OMAT 270 RA Processors) who sold the equipment will provide or arrange for repair of the equipment during the dealer's normal working hours. Such repair service will include any adjustments and/or replacement of parts required to maintain your equipment in good working order.

How To Obtain Service

Should the equipment require service, refer to the sales contract for details on whom to call for service, or contact the dealer (for KODAK X-OMAT 270 RA Processors) who sold the equipment.

Limitations

Warranty service is limited to the contiguous United States, the island of Oahu in Hawaii, and certain areas of Alaska.

This warranty does not cover—

- circumstances beyond the control of Kodak,
- misuse,
- abuse,
- attachments,
- accessories,
- alterations not marketed by Kodak (including service or parts to correct problems resulting from the use of such attachments, accessories, or alterations),
- failure to follow the operating instructions recommended by Kodak,
- supply items.

Kodak makes no other warranties, expressed or implied, for this equipment.

Repair without charge is the only obligation of both Kodak and the dealer under this warranty. Kodak will not be responsible for any consequential or incidental damages resulting from the sale, use, or improper functioning of this equipment, even if loss or damage is caused by the negligence or other fault of Kodak.

Such damages for which Kodak will not be responsible, include, but are not limited to, loss of revenue or profit, downtime costs, loss of use of the equipment, cost of any substitute equipment, facilities or services or claims of your customers for such damages.

This limitation of liability will not apply to claims for injury to persons or damage to property caused by the sole negligence or fault of Kodak or by persons under its direction or control.

3059SS_B.txt

Publication Change Table

Revision Date	ECO No.	PCN No.	PCN Pub. No.	Affected Pages	Filename	Description
May 1994	2592-265	1	2B6842	All	3059ss_b.txt	Supersedes Site Specifications, Publication No. 636714, dated 4/91. Updates information and illustrations throughout.

3059ss_b.txt

Kodak and *X-Omat* are trademarks.

Health Sciences Division

Printed in USA

EASTMAN KODAK COMPANY • ROCHESTER, N.Y. 14650